

**Idaho Department of Fish and Game,  
January – March, 2004**

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**Kootenai River Fisheries Recovery Investigations**  
Quarterly Progress Report and Summary of Activities

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Project Personnel:

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**Field Work Completed or in Progress and Summary of Results**

***Rainbow and Bull Trout***

Participation in Subbasin Planning meetings and reviewing and editing sections of the Subbasin Plan were the main tasks carried out for the trout project this past quarter. Work was also completed for the 2004 Workplan, including an objective and task oriented monthly budget.

A summarization of rainbow trout data collected from the Kootenai River in Idaho and Montana was also conducted. The limited pre-Libby Dam (prior to 1972) data available indicates the rainbow trout population has increased in the Montana reach since 1971, based on electrofishing catch rates. There is no comparable data pre-Libby Dam for Idaho.

Since Libby Dam, both states have been monitoring various aspects of the trout population including densities, growth rates, population size structure and creel data. The limited data that is comparable between the two states indicates the age-2 and older rainbow trout density in Idaho (47 trout/km in the Hemlock Bar reach) is at least an order of magnitude lower than in Montana (662 trout/km in the Flower Pipe reach).

The lower density in Idaho is probably the reason for the lower angler catch rates compared

to Montana. Trout (rainbow and westslope cutthroat) catch rates for the Kootenai River, Idaho based on year-long creel surveys ranged from 0.03 to 0.21 fish/h. Catch rates in Montana ranged from 0.36 to 0.48 fish/h.

Idaho rainbow trout have a shorter length-at-age-3 than Montana fish (Figure 1). This comparison is based on data from the same year classes only, resulting in a small sample size ( $n = 4, 4,$  and  $3$  year-classes for age-1, 2, and 3, respectively), but controlling for differences that could be caused by annual environmental variation. There was no difference in length-at-age-1 or 2 for Idaho vs. Montana fish. Growth of rainbow trout in the Montana reach appears similar to that prior to Libby Dam (Figure 1).

Idaho rainbow trout appear to be in slightly poorer condition than Montana fish. The mean relative weights ( $W_r$ ) for Idaho rainbow trout sampled in the fall from 1998 through 2001 were 87, 82, and 82 for the 201-305 mm, 306-405 mm, and >406 mm length groups respectively. The most recent data for Montana is for 1988-1990 when the mean  $W_r$  's for the Flower-Pipe section were 93, 87, and 83 for the 201-305, 306-405, and >406 mm length groups, respectively (calculated from data provided by M. Hensler, MFWP).

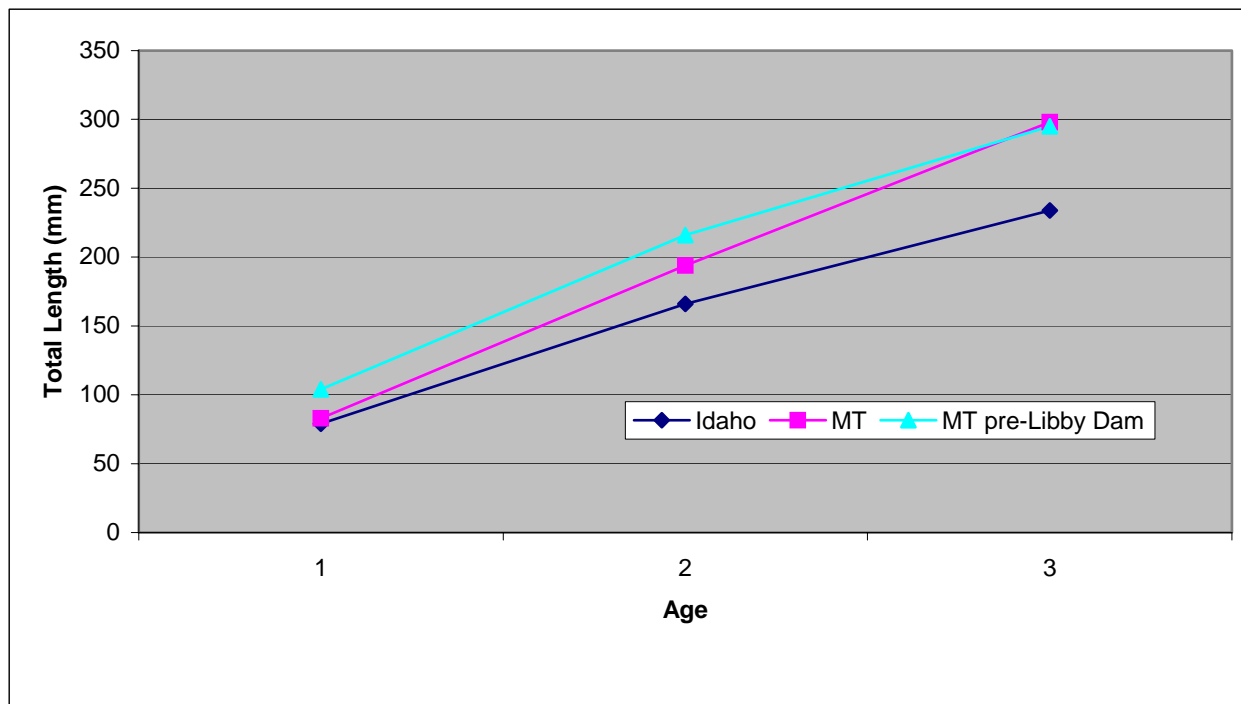


Figure 1. Kootenai River rainbow trout length-at-age for year-classes with comparable data for Idaho and Montana, and for Montana pre-Libby Dam.

### *Ecosystem Rehabilitation*

A meeting was held recently with Charlie Holderman of the Kootenai Tribe of Idaho to discuss preparation for the 2004 field season and spring 2005 nutrient application. Details were discussed about the purchase of fertilization equipment (holding tanks, application system components, and fertilizer) this field season. At this meeting an additional point was brought up about whether or not we are sampling our key indicator species (mountain whitefish) at the correct time of year. The concern was that we may be sampling a transient population that is moving through to spawning locations higher up in the drainage and not the resident population that will be experiencing the effects of nutrient enhancement. If this is the case our estimates may not be an accurate indication of the success of the treatment. The decision was made to tag several mountain whitefish and follow them through their spawning season to determine what proportion are leaving our biomonitoring areas during our fall sampling.

This past quarter, zooplankton sampling was

performed each month and is in the process of being analyzed. Additionally, IDFG will now be assisting KTOI in collecting nutrient samples as well as chlorophyll concentrations in the upper canyon section in order to facilitate collection efficiency.

This years IKERT meeting will be held in Bonners Ferry on July 21-23, 2004. This meeting will be held as a final decision making meeting, addressing modeling questions with Josh Korman and Carl Walters as well as other pros and cons with regards to fertilizing the Idaho section of the Kootenai River.

Zooplankton collections of several lakes in Canada were analyzed this past quarter to determine what might be an “optimal” level of density in lakes that have healthy burbot populations. Figure 2 provides preliminary information on what optimal densities are and how the Kootenai River and Kootenai Lake compare.

Additional work included the 2004 BPA work plan, analysis of 2002 and 2003 scale information, and writing a news release.

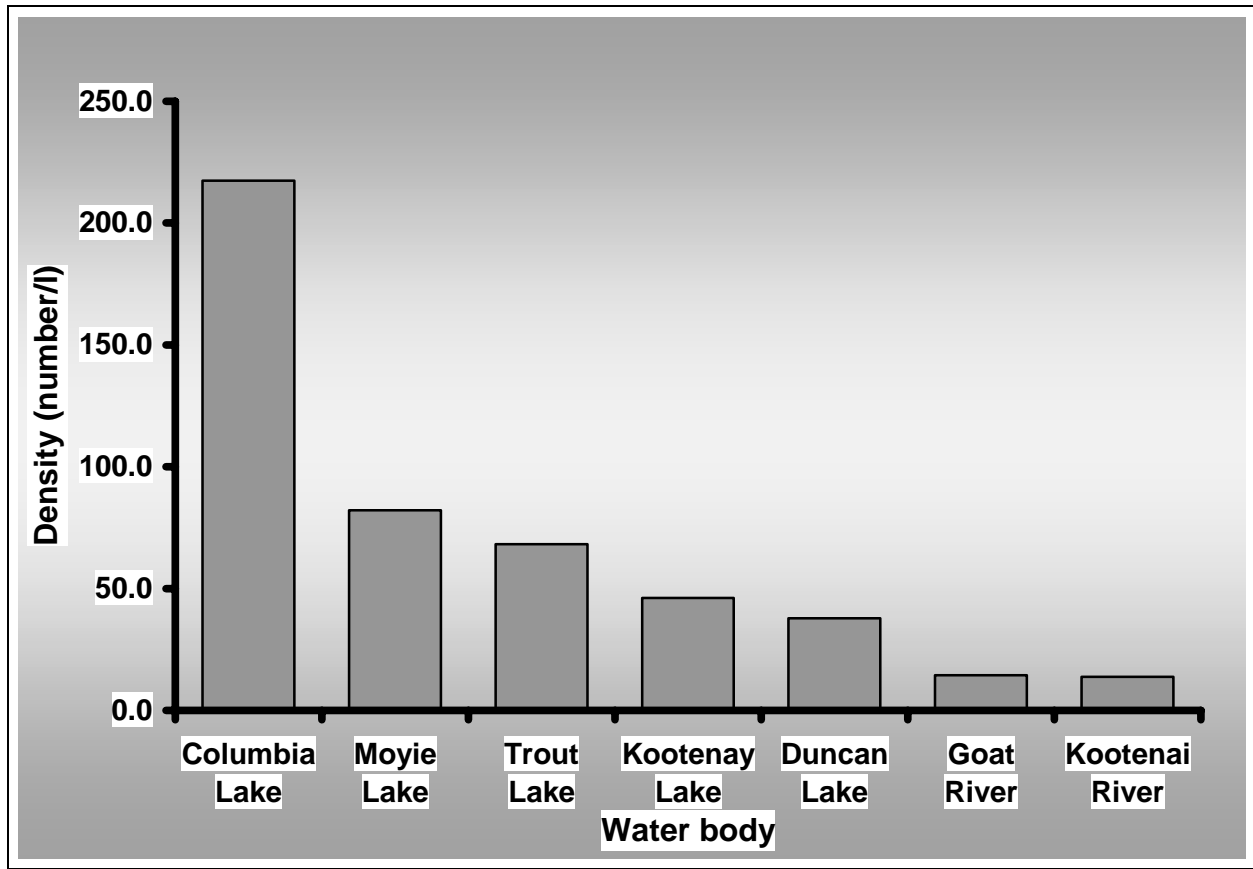


Figure 2. Zooplankton densities in burbot rearing habitat (pelagic zone) of the Pacific Northwest.

### ***Burbot***

Thanks to Greg Hoffman, of the US Army Corps of Engineers (USACE), we have a summary of the 2003-2004 Systems Operation (SOR) request of the Bonneville Power Administration and the USACE for the winter operation of Libby Dam for burbot migration and spawning (Figure 3). The SOR was at the request of the Kootenai Valley Resource Initiative's Kootenai River Burbot Recovery Committee. The 2003-2004

Burbot SOR specifically requested a maximum flow of 15 Kcfs from December 1 through 22, and a maximum flow of 10 Kcfs from December 23 through January 31, with preference during the latter portion of the request for an average of 7.3 Kcfs (Figure 3). It also requested that Libby Dam release the coolest water possible.

Maximum flow requests were exceeded for most of the early part of December, and again during early January, but were met in full after mid-January.

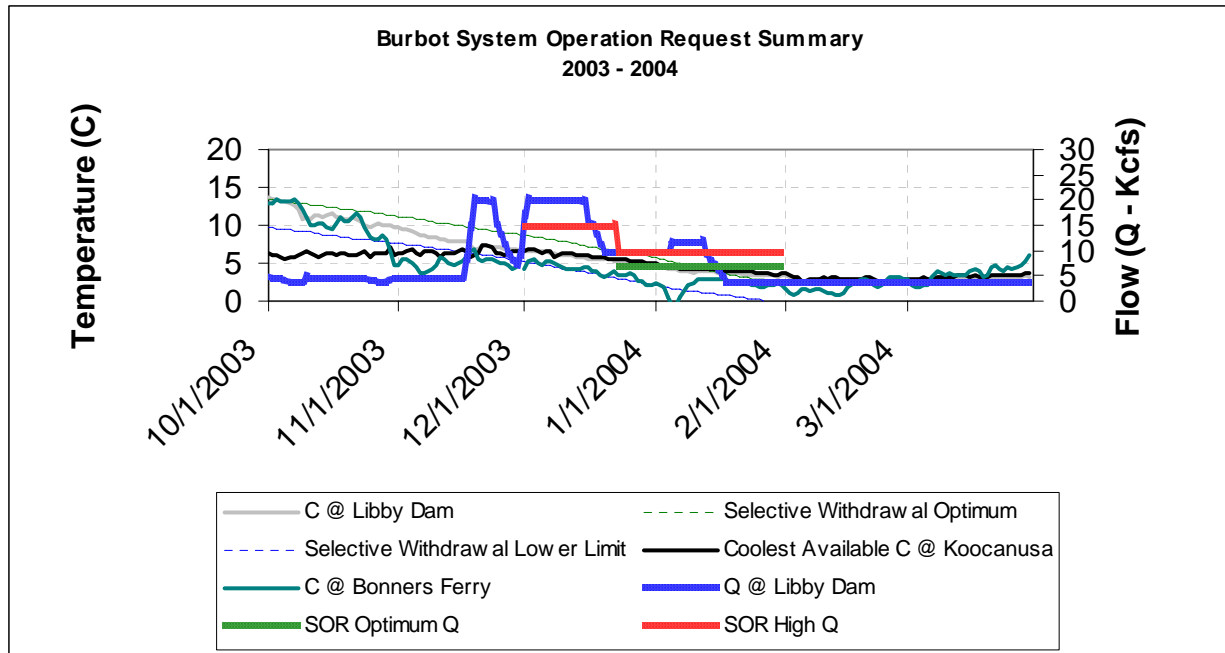


Figure 3. Hydro and temperature graph for the Kootenai River during the winter of 2003-2004.

Temperatures of water were released from Libby Dam at or near the coolest available in the range of the selective withdrawal system for the duration of the SOR. October and November (pre-SOR) are shown on this graph to indicate that cooler water is available for release in those months, and the Corps could target them to at least the Lower Limit of the Selective Withdrawal agreement, which could perhaps be beneficial to burbot in that those temperatures would more closely approximate natural pre-dam conditions. Further reductions (below the minimum) would require renegotiation with Montana Fish Wildlife and Parks (FWP).

Mark and recapture of burbot in the Kootenai River during the winter dam operation included

### ***White sturgeon***

The 2004 white sturgeon component of the Kootenai River Fisheries Recovery Investigations began the week of March 3rd with set lining and angling. Sampling included length and weight enumeration, sex determination, recording number of recaptured fish, and PIT tagging. Males and females thought to be spawning in 2004 will be fitted with sonic and radio transmitters and moved upstream to the Hemlock Bar reach (rkm 262.0) as

the capture of a total of 16 burbot of which four were recaptures (two from 2003-2004 and two from previous years). Eleven burbot had sonic transmitters externally attached to them while a 12<sup>th</sup> fish is a carry over with an active transmitter from winter of 2000-2001. A total of four transmitters are still active. One of the recaptures has been captured a total of five times. This burbot was first marked 10 February 2000 and was 494 mm, on consecutive recaptures from then through 2004 it was 530, 530, 588, and 617 mm in total length, it nearly tripled its weight from 600 g in 200 to 1,680 g in 2004. Only one burbot has been caught to date in a tributary study, Boundary Creek.

part of the set and jet program. Depth sensitive radio transmitters will be attached to a sample of the females brought to the Hemlock Bar reach to further evaluate their depth preference in the water column during the spawning season. Females not used in the set and jet program will be brought to the Kootenai Tribal Hatchery facility and used for propagation.

From March 3rd through April 6th, 52 white sturgeon were sampled. Thirty-two of these individuals were males, twelve were females, and

sex was undetermined for eight individuals. Of the fifty-two white sturgeon sampled, only six were unmarked and not sampled previously. With sexes combined, total length ranged from 116 to 337 cm and weights ranged from 9 to 182 kilograms. On March 29th, the largest Kootenai River white sturgeon in recent history was captured at Ferry Island (rkm 205.0) on a setline (Figure 4). Total length was 337 cm (11.1 ft) and the fork length was 279 cm. Weight was estimated to be near 182 kg (400 lb). This fish was previously captured in 1989, and was 308 cm (10 ft) total length. On March 30th, two males were fitted with sonic transmitters and radio transmitters and moved upstream as part of the set and jet program. As of April 6th, both individuals had moved out of the study area and were below Ambush Rock (rkm 244.5). As of April 6th, seven

gravid females were brought to the Kootenai Tribe Hatchery facility for propagation.

On February 25 the Kootenai Tribe of Idaho tagged 10 juvenile sturgeon with radio transmitters and released them in the “sturgeon hole” below Kootenai Falls, Montana. The objective was to determine if juvenile hatchery white sturgeon would stay in Montana if they were released there and if they did move under what circumstances might movement be anticipated or elevated. Shortly after the release one sturgeon dropped downstream about 30 km but almost immediately moved back upstream to the release location. Several weeks later two more fish moved downstream about 15 km and have stayed in their new location into April. This movement occurred with water temperatures at about 5°C and flows of only about 115 m<sup>3</sup>/s.



Figure 4. The 337 cm (11.1 ft) white sturgeon captured near Ferry Island in the Kootenai River, March, 2004, It was estimated at about 182 kg (400 lb). This fish was first captured in 1989 and was 305 cm (10 ft).

## **Activities Planned for Next Quarter**

### **Burbot**

- Burbot sampling with baited hoop nets will continue in Idaho but only at Ambush Rock
- Telemetry for burbot will continue at a minimum of three times a week until all transmitters have expired
- Sampling for juvenile burbot with ½ m nets will continue
- Light trap sampling for burbot will continue
- Initiate 2003-2004 Burbot Annual Report
- Retrieve thermographs

### **White Sturgeon**

- Set up a pheromone drip station in the Hemlock Bar reach
- Egg mat sampling, and continued telemetry, and adult white sturgeon sampling
- Incorporate advanced sonic telemetry technologies into the standard monitoring and evaluation program by establishing a VEMCO sonic receiver array from the Hemlock Bar reach to the British Columbia border (rkm 260 to 170)
- Report writing and data management

### **Ecosystem Restoration**

- Collect zooplankton in 5 lakes in Canada for comparison to Kootenai River Basin
- Meet with Kootenai Tribe of Idaho to plan for this years IKERT meeting in July
- Analysis of 2003 electroshock data
- Zooplankton and rotifer sampling and identification will continue
- Analysis of zooplankton samples collected in spring of 2003
- Final analysis of scale data collected from 2002 fall shocking
- Finish draft 2003/04 annual report

### **Rainbow and Bull Trout**

- Work on revisions to the 2002 Annual Report
- Work on revisions to trout recruitment manuscript
- Take monthly nutrient samples from Boulder Creek beginning in June

## **Meetings Held/Attended and Communication**

Jody gave a presentation at the Idaho Chapter AFS meeting in Moscow

Jody and Vaughn participated in three Subbasin Planning meetings and phone conferences

Jody had an oral presentation at the ICAFS annual meeting

Vaughn had an oral presentation for the Kootenai Valley Sportsman's Club

Vaughn wrote a burbot news release and had two news interviews and one radio interview.

Vaughn had a presentation on burbot population status at a Upper Columbia River Resident fish symposium at the Western Division AFS meeting

Vaughn attended three Kootenai River burbot recovery team meetings

Vaughn attended a IDFG Fish Managers meeting

Vaughn and Pete attended a transboundary coordination meeting

Jody, Vaughn, Ryan, and Pete attended a Fisheries Research meeting and a statistics workshop  
Vaughn attended a wolves in Idaho workshop

Vaughn worked at the Big Horn show and represented IDFG at the Bonners Ferry Pheasants  
Forever Banquet

Ryan attended 2004 ICAFS meeting in Moscow in January and had an oral presentation

Ryan attended fisheries research meeting in Moscow in January

Ryan communicated throughout the quarter with Charlie Holderman of the Kootenai Tribe on project  
timelines.

Ryan talked to a local sportsman's group about Kootenai River Ecosystem Project in March.

Vaughn coordinated with biologists in Alberta, Washington, Wyoming, and Okanogan, BC to get burbot  
tissue samples for mt DNA and nuclear DNA analysis

Cc. Charlie Craig & Scoott Bettin (BPA)  
Sue Ireland (KTOI)  
Colin Spence (BC Fisheries)  
Brian Marotz (MFWP, Kalispell)  
Mike Hensler (MFWP, Libby)  
Jeff Laufle & Greg Hoffman (USACE)  
Steve Duke, Bob Hallock (USFWS)  
Virgil Moore, Steve Yundt, Ned Horner, Chip Corsi, Greg Johnson, Fred Partridge, Mark Gamblin  
(IDFG)  
Gary Barton (USGS)  
Boundary County Commissioners